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REMARKS

Claims 3-5, 7-11, 16-33, 35, and 37-40 are pending. Claim 34 has been canceled in this response. Claims 25-27, 29, 31, 33, 35, and 37-38 are amended. A minor amendment in the specification has been made to correct a clerical error. No new matter has been introduced. Continued examination of the application is requested.

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The Term "Subplantation"

Applicants reiterate that the term "subplantation" was well known in the art at the time of filing and used in the context of this well known meaning in the specification. Again, Applicants respectfully refer the Examiner to a publication by Lipshitz et al., entitled "Subplantation Model
15 for Film Growth from Hyperthermal Species: Application to Diamond," *Physical Review Letters*, March 13, 1989, made of record in an IDS submitted on June 1, 2006. Also, Applicants respectfully refer the Examiner to page 1293 of the publication.

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Rejections under 35 U.S.C. 112, First Paragraph, Written Description Requirement

Claims 26-27, 29, 31-35, and 37-40 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

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In particular, with respect to claim 31 (and its dependent claims except claim 34), the Examiner has alleged that the claim "still encompasses the rejected broadened scope". Claim 31 has been amended to recite a magnetic recording media substrate so that this rejection is overcome. In accordance with the amendment, claim 34 has been canceled.

Claim 31 has been further amended to recite a substantially uniform impact energy distribution and a substantially uniform weight distribution so that the Examiner's New Matter

5 rejection is overcome. Claims 33 and 35, which depend on claim 31, have been amended in accordance with the amendment of claim 31.

With respect to claims 26 and 37, the Examiner has alleged that these claims continue to encompass new matter. Applicants have amended claims 26 and 37 to recite that the source material comprises acetylene and that the non-dominant species of carbon ion comprises not
10 more than about 5% of the ions in the stream when the pressure is maintained not more than about 5×10^{-5} mbar. The rejection is overcome, and Applicants respectfully request the rejection to be withdrawn.

With respect to the inconsistency in the value of a Raman G peak, claim 29 has been amended to correct a typographical error so that this rejection is overcome.

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Objection to the Specification

Pursuant to the Examiner's request, the first row of the fifth column of TABLE II on page 27 of the specification has been amended to correct a clerical error. The amendment contains no new matter and is supported by the disclosure, page 27 ll. 7-8 and 17-19.

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Objection to Claims 37-38

Claims 37-38 were objected to because of the informalities. Pursuant to the Examiner's request, claims 37-38 have been amended to have antecedent basis in agreement with claim 3.

25 Rejection under 35 U.S.C. 112, Second Paragraph

Claims 25, 27, 35, and 38 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. The Examiner has alleged that to define a property of an ion beam with respect to a voltage which is not and has never been required to be used in a process is unclear. Claims 25, 27, 35, and 38 have been amended to recite that the ions are accelerated toward the substrate by a bias voltage. The rejection is overcome, and Applicants respectfully request the rejection to be withdrawn.

Rejection under 35 U.S.C. 112, First Paragraph, Enablement Requirement

Claims 30 and 40 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The rejection is respectfully traversed. Further to Applicants' previous remarks provided on pages 7-8 of the response dated June 18, 2007, Applicants refer the Examiner to the TABLE II and paragraphs [0101] and [0102] on page 27 of the specification, which states that:

[0101] Table II summarizes the variation of physical properties of the films as a function of thickness. The average ion energy per carbon ion was uniformly maintained at about 100 eV...

[0102] One noteworthy observation from the Raman spectra is the increase in both the position of the G-peak as well as the I_D/I_G ratio (the area ratio of the D and G peaks) with increasing film thickness. This shows that the percentage of C-C sp^3 content in the bulk of the films increases with decreasing thickness. D-peak bandwidth also increases with decreasing film thickness within the range monitored. The bandwidth of the D-peak in the optimized films is above 150 cm^{-1} , indicating very low levels (or absence) of graphitic phase clustering within the diamond-like carbon amorphous matrix. This result is consistent with the relatively high Plasmon-peak measured from the electron-energy-loss-spectroscopy (EELS). Plasmon peak is the energy of a type of excitation called a plasmon. It is a quantum of charged particle cloud vibration. The energy value is directly related to the charged particle (e.g., electron) density.

The above disclosure explains various physical properties and their relationship with each other, where the plasmon peak energy as related to the density, percentage of C-C sp^3 content,

5 and diamond-like qualities of the films is described. Applicants respectfully request the Examiner to withdraw the rejection.

Rejections under 35 U.S.C. 103(a) in view of Baldwin

10 Claims 3-5, 16-17, 20, 23-24, 29-30, and 37-38 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,616,179 (hereinafter, "Baldwin"). Applicants respectfully traverse.

The Examiner has alleged that the elements of the claims are inherently present in Baldwin. Contrary to the Examiner's assertion, however, Baldwin not only fails to teach each element of the claims expressly or inherently but also teaches away from the subject matter claimed in the Applicants' claims. In particular, the Examiner has failed to show that the claimed substantially uniform impact energy distribution and substantially uniform weight distribution are necessarily present in Baldwin, as Baldwin teaches away from these features. Baldwin, in col. 5 ll. 55-56 and col. 6 ll. 3-8, states:

20 [T]he present process using the end-Hall ion source is superior to conventional methods in a number of respects:

...
25 ion energy distribution contains both low energy ions and a high energy component of the beam which gives proper amount of high energy ion bombardment—this would normally remove the need for a second ion source for argon or other ion bombardment for ion-assisted deposition;...

Accordingly, claims 3-5, 16-17, 20, 23-24, 29-30, and 37-38 are allowable over Baldwin, and the Examiner is respectfully requested to withdraw the rejection.

30 Rejection under 35 U.S.C. 103(a) over Baldwin in view of Rabalais

5 Claims 19, 31-35, and 39-40 were rejected under 35 U.S.C. 103(a) as being unpatentable over Baldwin and further in view of U.S. Patent No. 5,374,318 ("Rabalais"). Applicants respectfully traverse.

 Claim 19 depends on allowable claim 3 and is allowable as depending on an allowable claim and reciting additional novel combinations of claim elements.

10 Amended claim 31 is allowable for reasons discussed above with respect to claim 3. Claims 32-33, 35, and 39-40 depend on claim 31 and are allowable as depending on an allowable claim and reciting additional novel combinations of claim elements. Claim 34 has been canceled.

15 Provisional Rejections under Nonstatutory Obviousness-Type Double Patenting

 All pending claims in this application were provisionally rejected on the grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims of Applicants' copending applications.

 Pursuant to MPEP section 804, where a "provisional" nonstatutory obviousness-type
20 double patenting (ODP) rejection is the only rejection remaining in the earlier filed of the two pending applications, or "provisional" ODP rejections in two applications are the only rejections remaining in those applications, the examiner should withdraw the ODP rejection in the earlier filed application thereby permitting that application to issue without need of a terminal disclaimer.

25 As discussed above, all pending claims in this application are allowable, and the provisional nonstatutory obviousness-type double patenting rejections are the only rejections remaining. Applicants respectfully request that the Examiner withdraw the provisional ODP

